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Reconnaissance of Some Gold and Tin Deposits of the Southern Appalachians. By L. C. GRATON; with notes on the Dahlonega Mines, by WALDEMAR LINDGREN. (U. S. Geological Survey, Bulletin No. 293.) Pp. 134, 9 plates. Washington, D. C., 1906.

The tin-ore occurs in ore-shoots of slight lateral extent. The only tin-mineral present is Cassiterite which is regarded as a primary constituent of the pegmatite in which it is found. Most of the production is from the Ross mine, near Gaffney, S. C., which in 1903 produced 35,925 pounds of concentrates, and in 1904, 74,396 pounds, which would average probably 66 per cent. to 70 per cent. tin.

The earliest gold-mining in the United States was probably in this region, but the production is not recorded until 1829, when \$3,500 was obtained from placers in Lancaster and Chesterfield Counties, S. C. The total production of the Southern Appalachians has probably been about \$10,000,000. In general placer-mining has been profitable, lode-mining unprofitable.

The ore is low grade, averaging \$8-\$12 gold per ton. Fissure veins of pyritiferous quartz are common. They are notably irregular and non-persistent. The most interesting and productive ores are replacement deposits which occur "in volcanic rocks of the quartz-monzonite-porphry group, and are most common in the fragmental varieties or tuffs." These deposits are large lenticular bodies of silicious, pyritiferous ore, "forty or fifty to hundreds of feet in length and twenty to several hundred feet in width." Many of them do not extend one hundred feet below the surface, others go down as far as present workings, or several hundred feet. The distribution of the ore-values is suggestive of secondary enrichment by descending solutions.

C. W. W.

Geology and Paleontology of the Judith River Beds. By T. W. STANTON AND J. B. HATCHER. With a chapter on "The Fossil Plants," by F. H. KNOWLTON. (U. S. Geological Survey, Bulletin No. 257.) Pp. 174, 19 plates. Washington, D. C., 1905.

The Judith River beds are non-marine Upper Cretaceous sandstones, shales, and clays, with lignite occurring in northern and central Montana and adjacent areas of Canada. The authors have established the fact that the Judith River beds belong to the Montana division, that they are separated from the Laramie above by several hundred feet of shales (Bearpaw shales) with the marine fauna of the Pierre, that they are underlain by marine shales and sandstones which constitute a distinct horizon (Claggett

formation) in the Montana group, and that they are strictly equivalent to the Belly River beds of Canada. The authors believe that the Eagle formation marks the base of the Montana group, that the Bearpaw shales, Judith River beds, Claggett, and Eagle formations belong to the Montana group and are "equivalent to the Pierre as that term is generally understood," and that "the use of the term Fox Hills as a formation or horizon name outside of the original area in South Dakota is of doubtful propriety."

C. W. W.

The Limeless Ocean of Pre-Cambrian Time. By REGINALD A. DALY.
(Reprint from *American Journal of Science*, Vol. XXIII, February, 1907, pp. 93-115.)

The conception of limeless ocean is urged as an explanation of the absence of fossils in non-metamorphic pre-Cambrian rocks. In Eozoic time the lime-salts inherited from Azoic time were precipitated as carbonate, because of the production of ammonium carbonate by decomposing organic matter. This and other conclusions are based on premises some of which are observational and sound, but others are postulates and deductions of indeterminate value. Perhaps unintentionally the author (p. 113, premises 9, 10, 11, and p. 100) has left the impression that the CaCO_3 of the sea has been always derived mainly from pre-existing limestone, instead of from decomposed silicates. From the hypothesis interesting deductions are made as to the early development of the hard parts of organisms.

C. W. W.

Rate of Recession of Niagara Falls. By G. K. GILBERT. Accompanied by a Report on the Survey of the Crest. By W. CARVEL HALL. (U. S. Geological Survey, Bulletin No. 306.) Pp. 31, 11 plates. Washington, 1907.

"The rate of recession of the Horseshoe Fall, or the rate of lengthening of the Niagara gorge, during the sixty-three years from 1842 to 1905 is found to be 5 feet per annum, with an uncertainty of 1 foot. For the thirty-three years from 1842 to 1875 the rate was apparently slower than for the thirty years from 1875 to 1905. The rate of recession of the American Fall during the seventy-eight years from 1827 to 1905 was less than 3 inches per annum." The latter figure is of interest to geologists because somewhat representative of the river's activity in gorge-making when the volume of water was much less."

C. W. W.